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December 1964

U-2 AIRCRAFT CARRIER OPERATION



project "WHALE TALE"

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Navy has no objection to declassification
and release.

Navy review(s) completed.

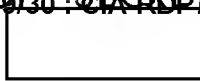
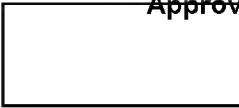
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ACKNOWLEDGMENT

The Deputy Director for Science and Technology, Central Intelligence Agency, wishes to express his appreciation to the National Photographic Interpretation Center for assistance in the preparation for publication and printing of this report.

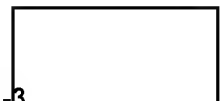
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CHAPTER I

EARLY HISTORY

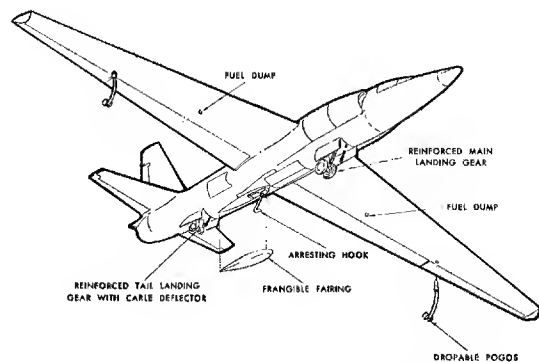
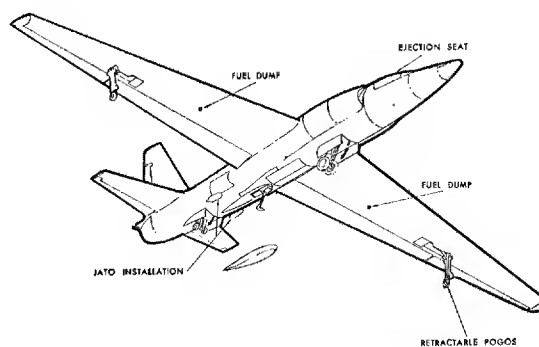
The U-2 overflight program commenced in the summer of 1956 and for the ensuing four years, operating from land bases in various parts of the world, scored a record of successes which have resulted in its being widely acclaimed as one of the most effective and productive intelligence collection programs in the history of the craft.

On 1 May 1960 the loss of a U-2 deep inside the Soviet Union brought a torrent of world-wide publicity. Subsequently, the problem of obtaining even temporary staging rights in friendly foreign countries became progressively more complicated. Because of the notoriety associated with the aircraft, its appearance in a foreign country, if detected, was likely to create political problems for the host government. This was likely to be true even in those instances where the host country was not subject to immediate pressure by the Soviet Union but was more often a function of internal domestic politics within the host government.

While all such foreign governments recognized the usefulness of the U-2 as an intelligence acquisition vehicle and all were eager for the protection such knowledge affords, few were readily willing to undergo the varied political pressures inherent in granting staging rights to the aircraft.

Given the state of affairs alluded to above, resorting to aircraft carrier based operations was a hopeful prospect not only for coverage of those targets not readily accessible from friendly foreign soil, but for any critical operations where valuable time could not be expended in protracted political negotiations.

The concept of operating the U-2 from an aircraft carrier was not a new or particularly imaginative idea at this time. In fact, it had been considered early in the U-2 program and had been the subject of a discussion during a briefing given to President Eisenhower in May of 1957.



DESIGN PROPOSALS for developing a U-2 with a carrier launch capability were submitted as early as 1957, as shown here. The configuration ultimately chosen most nearly resembles that in the lower drawing with the addition of some additional features such as the mechanical spoilers installed on the wings.

At this time, the Chief of Naval Operations, Admiral Arleigh Burke, recommended to the Director of Central Intelligence, Allen W. Dulles,

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that immediate action be initiated to develop a U-2 carrier based capability. On 2 August 1957, Lt. Gen. Charles P. Cabell, Acting Director, Central Intelligence Agency, in a memorandum to the Chief of Naval Operations stated as follows:

"(A) The carrier capability at this time would add little to the coverage of the Soviet Bloc obtainable by the U-2 from the land bases to which it now has access.

"(B) The availability of alternate land bases provides a fair degree of insurance against political evictions, but

"(C) Carrier operations, by reason of flexibility and independence of foreign jurisdiction, would generally enhance the reconnaissance capability of the United States, especially with respect to areas outside the Soviet Bloc. Accordingly, although the benefit to the project would be too limited to justify the expenditure of project funds for the conversion of aircraft, this Agency would be happy to see this additional capability in hand. These views have, of course, been made known to the Navy in recent conversations. It is suggested that the

Navy approach the Air Force directly and seek a resolution of the issue."

Since the U-2 project was a joint CIA-USAF project administered and operated by CIA and supported logistically by USAF, any proposal such as the conversion of U-2's for carrier suitability would have required both CIA and USAF concurrence. It subsequently developed that USAF decided there was no need for a carrier capability and in 1957 the attempt to develop the carrier capability was disapproved by the Chief of Staff of the United States Air Force.

The Navy attempted on several occasions between 1957 and 1960 to obtain a joint agreement between CIA and Air Force to the effect that a carrier capability should be developed. These attempts met with little success due primarily to the fact that the Agency was able to land-base the U-2 at selected bases compatible with coverage of the Soviet Union and Bloc countries.

Despite the loss of the U-2 over the Soviet Union on 1 May 1960 and the limited operations of the U-2 which followed, the carrier proposal was not seriously pursued again until 1963.

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CHAPTER II

APPROVAL

The proposal to develop a carrier configured U-2, designated the U-2G, gained impetus early in 1963 when Lt. Gen. Marshall S. Carter, Deputy Director of the Central Intelligence Agency, took a personal interest in the project.

General Carter engaged in discussions with Mr. Clarence L. "Kelly" Johnson of Lockheed Aircraft Corporation, designer of the U-2, on the question of whether there would be major problems involved in modifying one or more of the CIA owned U-2's for carrier operations. Mr. Johnson assured General Carter that the aircraft could be modified with relatively minor design and engineering changes and at a reasonable cost.

In view of Mr. Johnson's assurances, General Carter instructed Colonel Jack Ledford, Assistant Director, Office of Special Activities, and his deputy, Mr. James A. Cunningham, Jr., to have their staff commence the required action for investigating the feasibility of operating CIA U-2's from aircraft carriers, and to determine the necessary measures to implement such a program.

The first of the actions taken by Col. Ledford and his staff featured a series of surveys and familiarization trips to various U.S. aircraft carriers and Naval air stations. The Agency team, headed by Mr. Cunningham, was accompanied by representatives from Lockheed Aircraft Corp. and the Office of the CNO. The purpose of the visits was to enable members of the Agency, Lockheed, and CNO jointly to investigate and define any potential problem areas which might affect the development of the U-2G and to work out, as quickly as possible, solutions to whatever problems that might

arise. It was during the course of these visits and discussions that a tactical doctrine for U-2 carrier based operations began to emerge.

After the initial series of visits and meetings, the group concluded that there were no insolvable problems that would preclude operation of the modified U-2's from an aircraft carrier. Based on the findings and recommendations of the survey team, Mr. Cunningham undertook a comprehensive staff study on the proposal which was subsequently submitted to General Carter.

In addressing the substance of the concept, Mr. Cunningham wrote in part, as follows:

"The basic question then is whether or not this aircraft can be economically adapted to work from carriers with an acceptable margin of safety in flight operations, and, once so adapted, can it operate with frequency varying from occasional to repeated, in this manner, without affecting the Navy's disposition of forces under existing Navy Single Integrated Operational Plan (SIOP) commitments. As indicated earlier, present engineering analyses confirm that the aircraft can be so operated theoretically as to produce a viable carrier capability for reconnaissance purposes.

"Aside from the unknown range and altitude characteristics of the converted aircraft (which will depend upon arresting gear weight for the most part), the only apparent aerodynamic question is associated with the behavior of the aircraft in the landing configuration when it is approaching a fast moving carrier from the stern. One suggestion which has been made

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SURVEY PARTY aboard the U. S. S. INDEPENDENCE. Left to right: Capt. Swanson, U. S. S. INDEPENDENCE; Capt. Martin D. Carmody, Office of the CNO; [redacted] Chief of Security, OSA; Mr. Edward L. Green, Eastman-Kodak; [redacted] Lockheed Aircraft Corp.; Mr. James A. Cunningham, Jr., DAD, OSA; [redacted] OSA Project Officer; and [redacted] Agency U-2 pilot.

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is that the standard angle of attack for such an approach with Navy aircraft which is three or four degrees to the horizontal be reduced to approximately 1 1/2 to 2 degrees in the case of the U-2 to permit a flatter angle of approach with power on so that "ballooning" of the aircraft prior to contact with the deck will be minimized.

"In a normal landing attitude, the U-2 rides tail high, which unless compensated for by a skillful power-on approach just above the stall speed may make the engagement of a carrier hook relatively difficult. There is a possibility that a problem may exist in wind pattern over the stern of a fast moving carrier, which according to Navy statistics, normally produces a

down-draft immediately to the rear of the stern, followed by an up-draft from 1,000 to 1,500 feet aft of the carrier. With its sizeable wing area and with flaps fully extended, there may be some adjustments in technique which will have to be accomplished in order to overcome the possible adverse effects of these phenomena.

"Stack wash from the carrier's funnels can largely be eliminated as a deterrent characteristic, since carriers on which the U-2 would be landed make their arrested landings on the angled deck, approximately nine degrees from the central axis of the hull away from the island, and the captains of both the USS LEXINGTON and USS INDEPENDENCE stated categorically that

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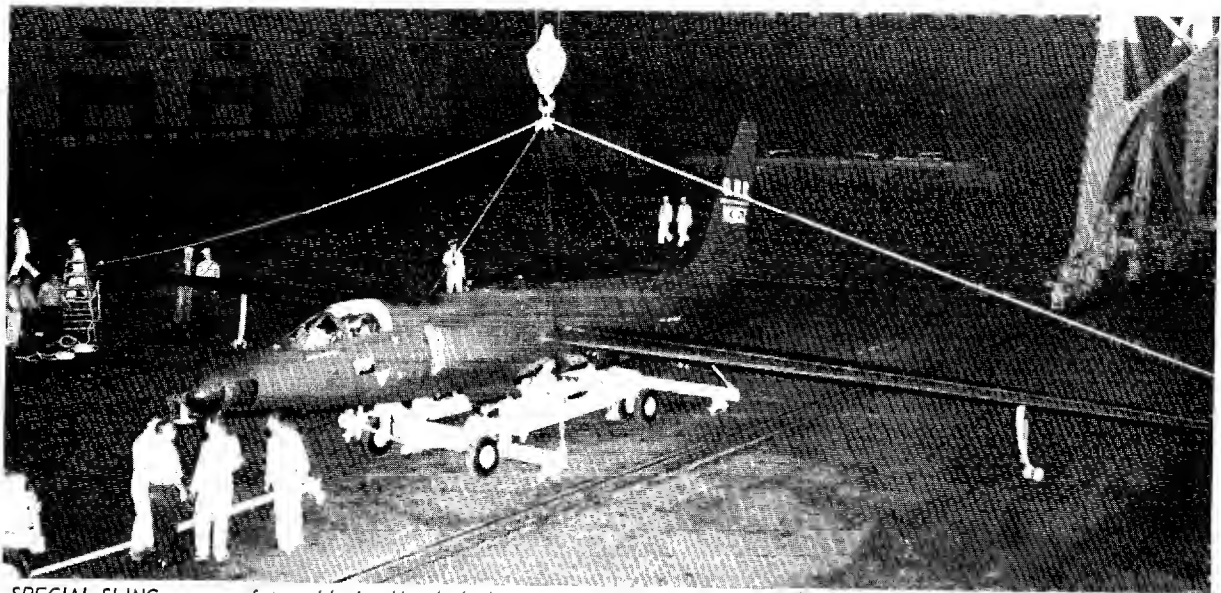
they 'could put the stack wash wherever the pilot wanted it.' This, of course, means that they could adjust the carrier's steaming angle to take maximum advantage of existing wind conditions to deflect stack wash. The only time this might be a modest problem would be when the aircraft is landed in a no wind condition, at which time it must rely solely on the carrier's forward momentum for relative wind."

Recognizing that the physical handling of the U-2G aboard a carrier would pose some unique problems, Mr. Cunningham further wrote:

"Movement of the aircraft from the hangar deck to the flight deck and conversely can be accomplished, despite the fact that no carrier in the United States Navy has elevators large enough to accommodate the U-2 without a portion of the wing extending beyond the outboard edge of the elevator. The largest elevator in the Fleet

measures only 70 by 52 feet, while those on the carriers in the group most likely to be employed in U-2 operations (CVA's 59 through 62), measure 63 by 52 feet. Lockheed has designed a special fuselage cart called a 'LOWBOY,' which permits side casting operations essential to movement from the hangar deck floor to the elevator and from the flight deck to the elevator, etc. This will be equipped with adjustable brakes to prevent any incident should the aircraft be on the elevator during period of rough weather.

"In addition, Lockheed has manufactured a special sling using a fuselage cart as the basic ingredient, which will permit on-and off-loading of the aircraft from the carrier when it is necessary to remove it or replace it aboard other than under its own power. The hangar deck offers adequate space for a compartmentalized working and refueling area.



SPECIAL SLING was manufactured by Lockheed which permits on and off-loading of U-2 from the carrier when it is necessary to remove it or replace it aboard other than under its own power. This photo was taken at North Island NAS as aircraft is prepared for initial launch tests.

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"Minor adjustments in the aircraft component of an operational carrier must be made to provide adequate storage space on the hangar deck, but Navy assures us that this is an administrative problem which can be encompassed by proper direction from higher authorities, beginning with the Chief of Naval Support and the CNO, augmented by the Joint Chiefs of Staff in those cases where such temporary depletion of the Air Carrier Group would affect the Navy's SIOP capabilities."

On the subject of cover, the staff study stated:

"A clear and plausible cover story, stoutly maintained by responsible persons concerned and supported by the IDEALIST Detachment aboard the carrier, can probably preserve the fiction of innocuous use of the U-2 for considerable time. This story will require precise and unequivocal attention to every detail. The IDEALIST Detachment and the carrier commander must be given detailed guidance, not only on the objective of the story, but also the necessary supporting actions. The basic requirement is to have a plausible reason for the presence of the U-2 aboard a carrier. Present discussions with the Navy, including Vice Admiral Rayburn, Director of Research and Development for the Navy, and his Deputy, Admiral Weakley, indicate that sponsorship for the U-2 aircraft on the carrier in the long run can be anticipated from the Office of Naval Research headed by Admiral Coates. The discussions thus far have not only indicated that ONR would be willing to have the U-2's attributed to its organization, but that a workable cover arrangement not unlike that which the Agency worked out in 1955 with NACA (ultimately NASA) could be effectuated."

The study concluded with a series of recommendations which, if approved, were designed to produce an operational capability at the earliest possible date.

On 23 July 1963, General Carter approved the staff study and its recommendation and Lockheed immediately began working on the design changes and modifications for two of the Agency U-2's. Concurrently, the OSA staff began coordination with the U.S. Navy for the implementation of the pilot training program and for U-2 suitability tests aboard a carrier.

The principal configuration changes incorporated in the U-2G in order to enable it to operate effectively from carriers included a mechanically operated fuel jettison system to permit the aircraft to be reduced to maximum gross landing weight in the event of either an inflight emergency requiring an immediate landing or in those cases where the aircraft is returned to the ship from a mission with fuel to spare. A further modification was the incorporation of a heavier landing gear which effectively more than doubled the original design specification of maximum deceleration in terms of feet per second. Coupled with this beefed-up landing gear were heavier pressure bulkheads in the landing gear section and augmented longerons in the fuselage at the trailing edge of the wing to withstand the added impact of carrier hook engagement. A modified T2V arresting hook was installed in the aircraft, covered by a plastic fairing which reduces aerodynamic drag, and which is jettisoned at the time the aircraft enters the traffic pattern around the carrier preparatory to landing.

The single most important modification, however, was the addition of a pair of mechanical spoilers situated midway outboard on the trailing edge of each wing. These are activated by a simple switch on the throttle quadrant. Upon actuation at the point of touch-down of

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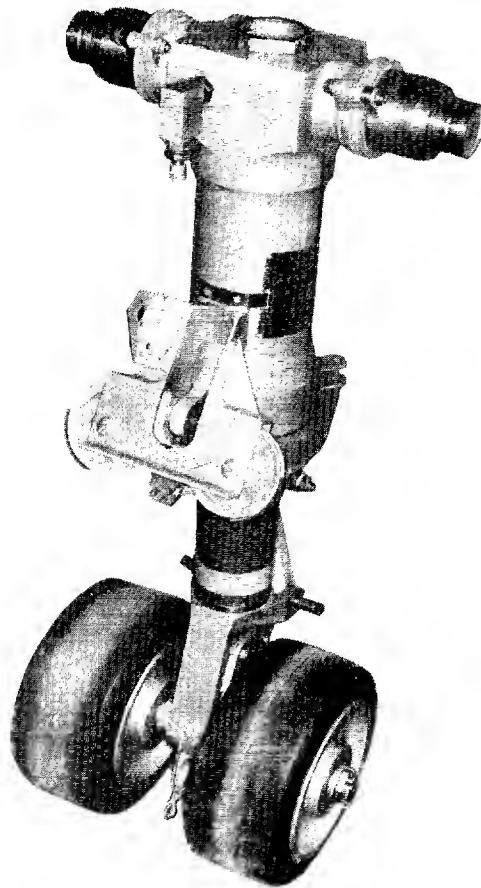
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the aircraft the wing stalls almost immediately, enabling the pilot to spot-land with nearly the same accuracy that would be encountered in more conventional aircraft. Light weight, one inch arresting cables have been substituted for the normal heavier arresting cables on the CVAs in order to reduce critical vibration encountered when the aircraft runs over the cables in the process of arrestment.

It subsequently proved necessary to depress the Fresnel lens landing system to an angle of 1.5 degrees to give the pilot of the U-2 a proper representation of the "meatball" during

his final approach to the deck. Experience has shown that under normal landing conditions with an approach speed of approximately 82 knots and with from 26 to 30 knots wind across the flight deck, effective arrestments at a relative speed of 50-55 knots can be obtained with the ship's arresting engines set at the lowest available figure of only 10,000 pounds of force. All takeoffs from the carrier with the U-2 are normally made on the axial as opposed to the angle deck which requires a clear deck forward in all cases. Catapult launch of the U-2G is not feasible for structural reasons.



BEEFED UP LANDING GEAR more than doubled the original design specification of maximum deceleration in terms of feet per second.

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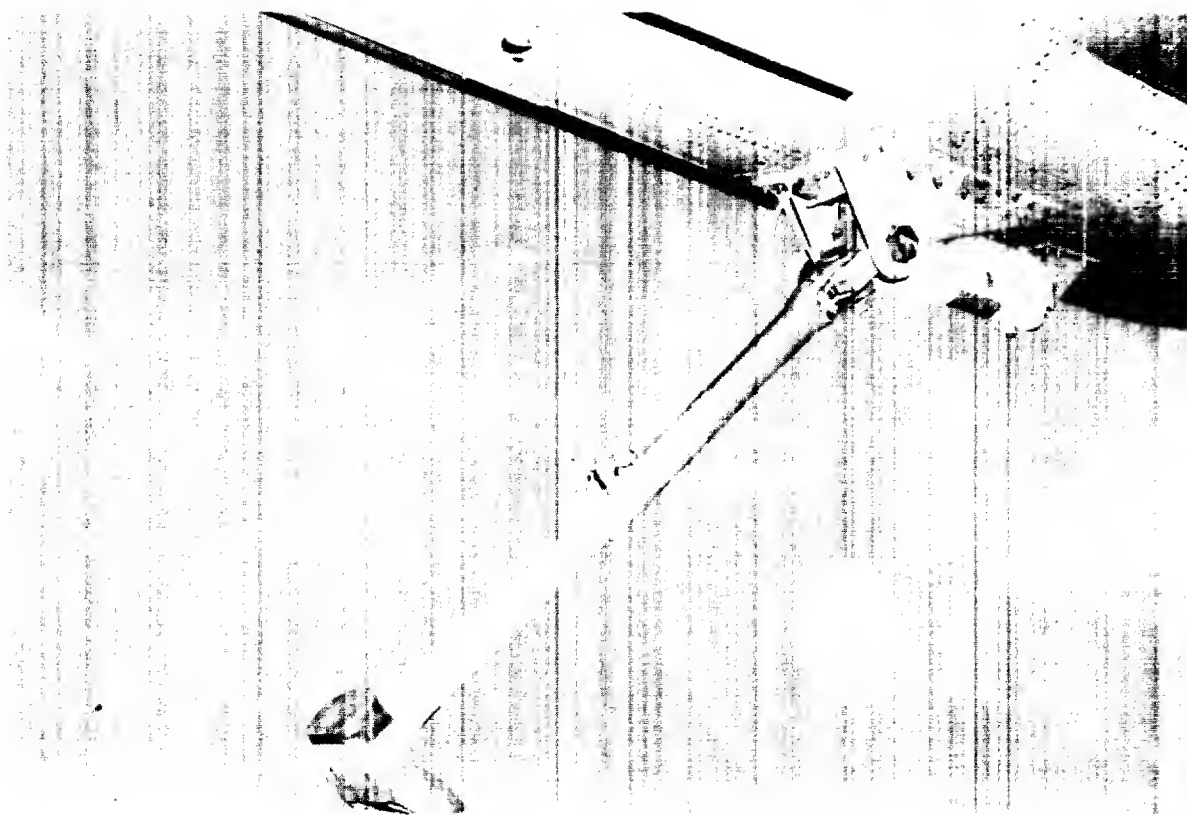
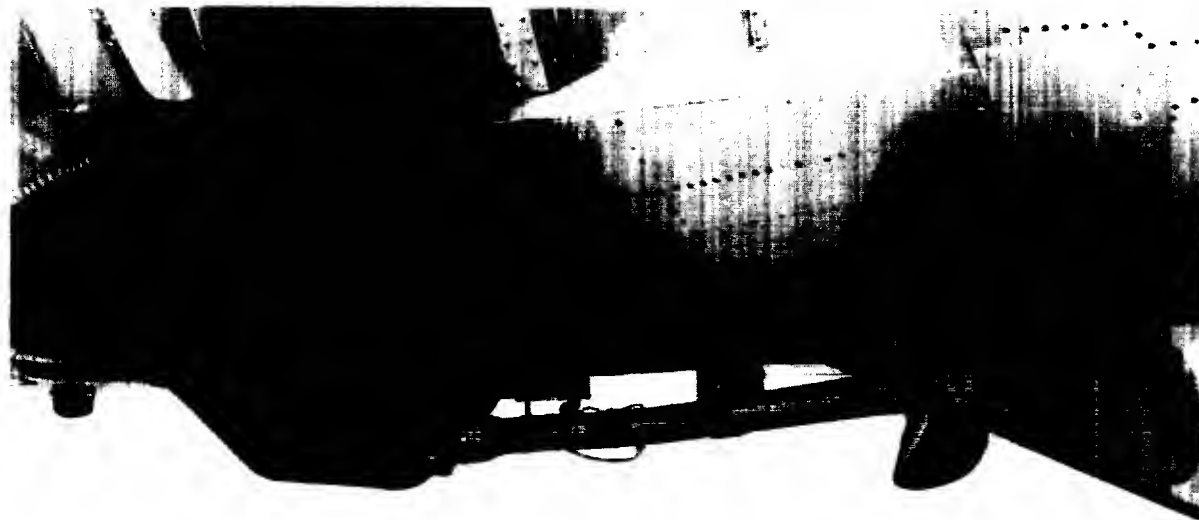
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ARRESTING HOOK installed in U-2 is shown in both the retracted and extended positions. Note in the upper picture the partial plastic fairing which reduces aerodynamic drag.

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CHAPTER III

PILOT TRAINING AND SUITABILITY TESTS

The first tests of a U-2 on an aircraft carrier were undertaken in August of 1963. For the preliminary tests a conventional (unmodified) U-2 was used. The operation was designated "Project WHALE TALE."

On the night of 2 August, an Agency U-2 was flown to North Island Naval Air Station at San Diego, California, where, under cover of darkness, and after midnight, it was loaded aboard the Aircraft Carrier USS KITTY HAWK and stowed below decks in the hangar bay. The most stringent security precautions were employed by both Naval and Agency security personnel to limit unwitting persons gaining knowledge of the operation. The North Island base personnel who assisted in moving and loading the U-2 (fire chief, SP's, crane operator, etc.) were briefed in general terms as to the sensitivity of the "ONR exercise" and were admonished not to discuss it with anyone.

The following day, the KITTY HAWK proceeded to a pre-determined test area approximately 50 miles off the coast. While a sharp look-out was maintained for any intruding surface or aircraft, the U-2 was brought up from the hangar deck and prepared for launch.

The aircraft was marked with the large letters "O.N.R." on the vertical stabilizer, in keeping with the agreed cover story that this was an Office of Naval Research project. All personnel participating in the tests were alleged to be either O.N.R. personnel or Lockheed civilian technical representatives.

While the U-2 was being readied for take-off, the commanding officer of the KITTY HAWK, Captain Horace H. Epes requested the attention of the ship's personnel on the public address sys-

tem and read the following prepared statement:

"This morning we will be conducting a series of tests sponsored by the Office of Naval Research to determine the suitability of launching the U-2 from a carrier. In today's operation we will be assisted by personnel from Lockheed Aircraft Corporation, the manufacturer of the U-2."

"The details of this program, and today's test, are classified because of the obvious far reaching implication of this program with relation to [redacted]"

In this regard, it is important that there be no discussion or disclosures of this test with unauthorized persons. This means anyone who is not aboard today. It is possible that you may read or hear something about this program in the newspapers or on the radio but this does not relieve you of your responsibility not to discuss today's test with unauthorized persons."

Insofar as it was possible to determine, this story was accepted without question by the carrier crew and as of the date of publication of this report, there have been no known security violations or even undesirable speculation by Naval personnel involved in the operation. The same cover story, with minor modifications,

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INTERESTED OBSERVERS of the first U-2 carrier launch tests are photographed on the flag bridge of the U.S.S. KITTY HAWK on 4 August 1963. Left to right: Captain Horace H. Epes, Jr., USN, skipper of the KITTY HAWK; Captain Martin D. Carmody, USN, Office of the CNO; Mr. C. L. "Kelly" Johnson, Lockheed Aircraft Corp.; Vice Admiral Paul D. Stroup, USN, COMNAVAIRPAC; Mr. James A. Cunningham, Jr., CIA; and Captain George C. Duncan, Asst. Chief of Staff for Force Readiness, COMNAVAIRPAC.

was used on subsequent carrier operations, including the operational overflight mission in the South Pacific, with equally successful results.

The KITTY HAWK was underway at 20 knots; this, combined with a 10 knot headwind resulted in a 30 knot wind across the flight deck. The impressive wing span and light construction of the U-2 under these conditions gave the maintenance crew some difficulty in holding the aircraft on the deck, even without application of power. On signal, the U-2 with [redacted] LAC test pilot, at the controls, started its take-off run down the flight deck. As the throttle was advanced, the 16,000 pound thrust

Pratt & Whitney J-75 engine catapulted the U-2 toward the bow of the ship. In approximately one-third the length of the flight deck the aircraft was airborne, the pogos fell away, and by the time the U-2 cleared the bow it was already approximately 1,000 feet above the carrier. Then, with pardonable exhibitionism, Schumacher racked the U-2 into a steep climb--a breath-taking spectacle to anyone who had never previously witnessed a U-2 take-off climb under full power. To the carrier crew, accustomed to the flat trajectory take-off of the heavier and more conventional carrier-based aircraft, the U-2 maneuver was a new and somewhat startling experience.

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The ensuing flight maneuvers were accomplished without incident. Schumacher made several low approaches to the flight deck to ascertain whether there were any aircraft controllability problems in the landing area and found that the U-2 was easily controlled throughout all the maneuvers. On his last pass at the KITTY HAWK's deck, he let the U-2 touch-down briefly and then reapplying power lifted off and set course for the LAC plant at Burbank, California. The initial tests were complete and proved that the U-2 could be operated successfully from carriers of the FORRESTAL class. They also furnished the Lockheed engineering staff with valuable data for use in the development of design changes necessary for modification of the U-2 for arrested landings aboard ship.

The U-2 pilots' Carrier Training Program, already well advanced in planning, was designated Project WHALE TALE II.

The decision to implement a training program for the Agency U-2 pilots was made concurrent with the decision to modify the U-2 for carrier operations. Mr. Cunningham, with other Agency staff members and Captain Martin Carmody, Office of Naval Operations, had previously met with the Naval Air Training Command Staff at Pensacola NAS, Florida, on 5 June 1963 to formulate and approve a syllabus for a training program for the pilots selected for the project.

It was agreed that these pilots, because of their high degree of competency and proficiency, would require only a short, but comprehensive, flight training program to qualify them for carrier operations. It was decided that the program would be accomplished in three phases, as follows:

(1) Phase One - Initial flight check-out in the Navy T2A aircraft and carrier type approaches and landings, all under the supervision of highly qualified Naval Landing Signal Officers at Monterey NAS, California.

(2) Phase Two - Further carrier type landings and approaches in the T2A at Pensacola NAS, Florida, until the Landing Signal Officer considered each pilot ready to land aboard an aircraft carrier. Actual T2A landings and qualifications aboard the aircraft carrier LEXINGTON in the Gulf of Mexico completed this phase.

(3) Phase Three - Initial carrier type approaches and landings in the U-2G at Edwards AFB until the Landing Signal Officer considered each pilot ready to land the U-2 aboard ship. Actual U-2 landings and qualifications aboard a FORRESTAL Class Carrier completed this phase.

The first group of four pilots began Phase One of the Carrier Flight Training at Monterey NAS on 17 November 1963, under the supervision of [redacted] (subsequently assigned to Project IDEALIST as resident Landing Signal Officer). After two weeks of training at Monterey, the group was ready for Phase Two, and on 21-23 November proceeded to Pensacola NAS where all four pilots performed the transition to qualified carrier pilots in their usual professional manner.

The second group consisting of four Agency pilots, Lockheed test pilot [redacted] and the Edwards Detachment Commander, [redacted] were initially scheduled to begin Phase One in December of 1963. However, due to heavy project operational commitments, their training was delayed until 5 January 1964. Training, once begun, went smoothly and professionally, and was completed on 15 February.

Phase Three commenced on 29 February 1964, the date the first U-2G was delivered to the Edwards AFB detachment. Each of the Agency pilots was given numerous sorties in the "G" where much practice went into the development of his flying techniques as derived

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PRECISION PERFORMANCE of U. S. Navy T2A's is demonstrated in this photograph of Project Headquarters personnel being air-lifted to the U. S. S. LEXINGTON to engage in planning for the WHALE TALE program. These aircraft were the training ships which initially were used to check-out U-2 pilots in carrier operations.

from his experience in the T2A. It should be noted that when [] declared the pilots operationally ready, each felt confident of his ability to undertake the arrested landings, having developed a profound respect for [] judgement and experience in carrier operations.

As the development of the U-2G was reaching its final stages by Lockheed and pilot training was nearing completion, the OSA staff began coordinating details for the suitability tests and pilot qualification with representatives from the Office of the Chief of Naval Operations and the Commander Naval Air Pacific, Vice Admiral Paul D. Stroup. With the cooperation and assistance of these officers, the program proceeded to the point where all elements were ready at the same time; the U-2G, project pilots, and the aircraft carrier USS RANGER which had been selected for the tests.

The RANGER operations were planned in three phases designed to take full advantage of the time the carrier was allotted for project use. This phase was designated WHALE TALE III and consisted of the following:

(1) Phase One - This phase was to be devoted to Lockheed Aircraft Corporation's exclusive use in testing the U-2G in carrier landings and suitability of operations aboard ship.

(2) Phase Two - Agency pilots' U-2G qualifications. This phase was to begin as soon as Lockheed had completed the Phase One test and had turned the aircraft over to the Edwards Detachment.

(3) Phase Three - This phase was to exercise the Edwards Detachment's operational capability and effectiveness while aboard ship.

WHALE TALE III began when a team composed of Headquarters, Detachment and Lock-

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hced personnel proceeded to the RANGER on 25 February 1964 and briefed and cleared the ship's Commanding Officer, Captain William E. Lemos, and other personnel for Project IDEALIST and the WHALE TALE III operations.

On 28 February 1964, Lockheed and Detachment personnel and equipment were loaded aboard the RANGER. On the following morning, the RANGER proceeded to the test area off San Diego where the operations were to be conducted. Phase One began with LAC pilot [] flying aircraft number 362 in a series of touch-and-go landings on the RANGER. The touch-and-go landings all went smoothly; however, on the first attempt for a hook engagement landing, the aircraft bounced and the hook engaged the wire while the aircraft was in the air. This caused the aircraft to be slammed back on deck and nose over. Minor damage resulted to the nose section of the aircraft which was taken below deck for repairs. After repairs were completed, the aircraft was flown back to Bur-

bank for the instrumentation read out. As a result of this incident, Phase One was rescheduled for 2 March 1964.

On 2 March, LAC pilot [] returned to the RANGER in aircraft 348 and completed four successful arrested landings. This completed Phase One. The aircraft was then turned over to the Edwards Detachment and Phase Two began.

On the same day, the first Agency pilot, [] began his U-2G qualifications in 348 and made several touch-and-go landings, but was unable to perform any arrested landings. He ran short of fuel while waiting for the RANGER to maneuver away from a foreign ship which had entered the operational area. He proceeded to North Island NAS for landing, and air operations were discontinued for the day.

On 3 March 1964, [] the next pilot, flew out to the RANGER from North



MINOR MISHAP aboard the U. S. S. RANGER is recorded in this series of photos. In the first photo the aircraft is making a normal approach to engagement.

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The U-2 has already touched down and has bounced back into the air. The engagement has taken place while still airborne.



The minor damage to the nose section was the result of the engagement taking place while still airborne. The damage was readily repaired aboard the carrier.

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DESIGNING WAYS of C. L. "Kelly" Johnson, a Lockheed vice president and designer of the U-2, were put to the test in configuring the aircraft for carrier operations. Here he appears to be not displeased with the results on completion of the initial launch and recovery tests.

Island NAS in aircraft 348 to continue Phase Two. [redacted] on his first touch-and-go landing, allowed the right wing to drop. The right wing skid caught on an arresting cable and was torn off. [redacted] then flew the aircraft to Edwards and landed safely on the dry lake bed without further incident.

As a result of these two incidents, both of the modified U-2's needed minor repairs before Phase Two could be continued. Therefore, with the Navy's concurrence, the remainder of

this exercise was planned to be conducted on 9 and 10 March 1964. This delay, as it worked out, was advantageous for all. The pilots refined their approach techniques by applying the experience gained from the 3 March flights.

On 9 and 10 March 1964, Agency pilots

[redacted] qualified in the U-2 without further incident. Phase Two and Phase Three were concluded. At this time the Detachment was considered operationally ready.

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IN THE GROOVE ALL THE WAY



A REAL SOFT TOUCH DOWN



THE HOOK ENGAGEMENT



A SLIGHT NOSE OVER TENDENCY



RUNNING THE WIRE OUT



THE END OF THE LANDING

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RECOGNITION - On 30 September 1964 before a capacity audience in the United States Intelligence Board meeting room of the Langley Headquarters of CIA, Lt. Gen. Marshall S. Carter, Deputy Director of CIA, (Right) presents the Distinguished Intelligence Medal to Mr. James A. Cunningham, Jr., DAD/OSA, for his singular contribution to the development of the U-2 carrier capability. Mr. Cunningham, a former U. S. Marine pilot himself, was cited for "the development of a unique method of acquiring foreign intelligence information."

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